

Claims

- [c1] 1.A road paving tractor comprising:
- a chassis having a front end and a rear end;
 - a hopper disposed on said chassis at said front end;
 - a driver station comprising a driver seat and a steering wheel;
 - said driver station disposed on said chassis at said rear end;
 - an engine and drive train coupled to said hopper and configured to provide propulsion of said hopper, said chassis and said driver station when said hopper is filled with road paving material and said driver station is occupied by a driver;
 - means for moving paving material from said hopper toward said rear end, such that said paving material is not dribbled below said tractor as a material conveyor loops underneath said tractor;
 - an attachment coupling means coupled to said chassis and toward said rear end, said attachment coupling means configured to temporarily receive one of a plurality of detachable road paving tool attachments; and,
 - said chassis, said hopper, said engine, said driver station, and said means for moving paving material being

free from attachment to any paving screed, road widening strike-off blade, and radially and vertically adjustable material mover, of a type configured to move paving material at an upward angle away from said rear end, when said attachment coupling means is not coupled to any of said plurality of detachable road paving tool attachments.

[c2] 2.A road-paving tractor of claim 1 further comprising a paving screed attached to said attachment coupling means.

[c3] 3.A road-paving tractor of claim 1 wherein said attachment coupling means is configured to operatively mate with each of said plurality of detachable road paving tool attachments without a need for welding to occur during a process of mating a detachable road paving tool attachment to the road-paving tractor.

[c4] 4.A road-paving tractor of claim 3 further comprising a mix transfer tool attachment.

[c5] 5.A road-paving tractor of claim 4 wherein said mix transfer tool attachment is a hot mix asphalt transfer tool attachment.

[c6] 6.A road-paving tractor of claim 5 wherein said mix transfer tool attachment comprises a means for elevating

hot mix asphalt.

- [c7] 7.A road-paving tractor of claim 5 further comprising a swinging slat conveyor and a swinging slat conveyor pivot support which provides support from below for said swinging slat conveyor and permits said swinging slat conveyor to rotate about a horizontal line and about a vertical line.
- [c8] 8.A road paving tractor of claim 7 further comprising a swinging slat conveyor-raising mechanism.
- [c9] 9.A road paving tractor of claim 8 further comprising an elevator assembly coupled to said rear end for receiving hot mix asphalt and for elevating said hot mix asphalt above an asphalt receiving point on said swinging slat conveyor while a distal end of said swinging slat conveyor is elevated with respect to said asphalt receiving point.
- [c10] 10.A road paving tractor of claim 3 further comprising a road widener attachment comprising a road widener strike-off blade and a road widener end gate, a road widener end gate angle control link, and a road widener strike-off blade angle control link.
- [c11] 11.A method of deploying multi-use road paving equipment comprising the steps of:

providing a paving tractor with a first detachable road paving tool attachment operatively coupled thereto at a first connection point, where said first connection point is on a vertically adjustable pull arm;

replacing said first detachable road paving tool attachment with a second detachable road paving tool attachment without welding or cutting metal at said first connection point;

where said first detachable road paving tool attachment is configured to perform a substantially different task than said second detachable road paving tool attachment; and,

wherein said paving tractor is a self-propelled vehicle configured to be driven by a driver located on and at a rear end of said paving tractor, said paving tractor further comprising a hopper disposed forward of said rear end, and means for conveying paving material from said hopper to said rear end.

- [c12] 12.A method of claim 11 wherein said step of replacing comprises the steps of:
- causing said first detachable road paving tool attachment, while coupled to said paving tractor, to be disposed over a structural member disposed higher than a tractor operating surface upon which said paving tractor is disposed;

causing a vertical separation between said structural member and said first detachable road paving tool attachment to decrease; and,
separating said first detachable road paving tool from said paving tractor.

[c13] 13.A method of claim 12 wherein said step of causing a vertical separation is accomplished by a manipulation of said vertically adjustable pull arm.

[c14] 14.A method of claim 13 where said step of replacing further comprises the steps of:
mating said second detachable road paving tool attachment to said vertically adjustable pull arm; and,
using a lifting force assisted by an engine onboard said road paving tractor to lift said second detachable road paving tool attachment.

[c15] 15.A multi-use road paving system comprising:
a road paving tractor comprising:
a chassis, having a front and a rear end;
a hopper for receiving and containing road paving material, disposed at and coupled to said front end;
a plurality of paving material moving augers disposed, at least in part, in said hopper, for moving paving material from said hopper toward said rear end;
an engine, coupled to said chassis, for providing motive

force to propel said road paving tractor;
a vertically adjustable arm, coupled to said chassis for providing movement of a connection point thereon;
a hydraulic system, coupled to said chassis, and receiving power from said engine, said hydraulic system for assisting vertical adjustment of said vertically adjustable arm;
a plurality of detachable road paving tool attachments, each configured to mate with said connection point, such that a manipulation of said vertically adjustable arm, via said hydraulic system, results in at least a vertical displacement of any detachable road paving tool attachment coupled thereto;
said plurality of detachable paving tool attachments each further configured, when coupled to said vertically adjustable arm, to cause road paving material, in contact therewith, to be relocated in a predetermined manner;
and,
said plurality of detachable paving tool attachments each further configured so as to be operatively attachable to and detachable from said connection point without either of welding and cutting, any structural metal components of at least one of said road paving tractor and a detachable paving tool attachment.

[c16] 16.A multi-use road paving system comprising:

a road paving tractor comprising:

- a chassis, having a front and a rear end;
- a container for receiving and containing road hot mix asphalt paving material, disposed at and coupled to said front end;
- means for moving said hot mix asphalt paving material from said container to said rear end;
- an engine, coupled to said chassis, for providing motive force to propel said road paving tractor;
- said chassis comprising a connection point;
- a detachable road paving tool attachment configured to mate with said connection point, such that a movement of said road paving tractor results in at least a horizontal displacement of said detachable road paving tool attachment coupled thereto;
- said detachable paving tool attachment further configured, when coupled to said connection point and moved along with said road paving tractor, to cause said hot mix asphalt road paving material, in contact therewith, to have a top surface with an increased smoothness characteristic; and
- said detachable paving tool attachment further configured so as to be operatively attachable to and detachable from said connection point without either of welding and cutting any structural metal components of at least one of said road paving tractor and said detachable paving

tool attachment.

- [c17] 17.A road paving system of claim 16 further comprising a lift system, coupled to said chassis, and receiving power from an engine, said lift system for assisting vertical adjustment of a vertically adjustable arm, said vertically adjustable arm configured such that a vertical adjustment results in a vertical displacement of said connection point.
- [c18] 18.A road paving system of claim 17 wherein said lift system is a hydraulic system and said detachable paving tool attachment is a screed.
- [c19] 19.A system of claim 18 further comprising a road widener configured for attachment to said connection point when said screed is not coupled to said connection point.
- [c20] 20.A road paving system of claim 19 wherein said road paving tractor further comprises a driver station comprising a seat and hydraulic controls.